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Embedding technology enhanced learning at universities: a collaboration between Newcastle University and University of Cumbria

Ann Thanaraj
University of Cumbria, UK

Steve Williams
Newcastle University, UK

Abstract

The aim of this article is to raise the profile of how universities can support academics in implementing their university strategy on Technology-Enabled Learning (TEL), thereby contributing to the transformation of students' learning. Using evidence from a series of workshops and structured interviews, our findings suggest that universities should undertake a contextual analysis of the factors that motivate and constrain academics in their own organisations to engage with technology in curriculum delivery and development. The authors encourage universities to explore how the barriers and motivators can be used to develop and implement TEL in an institution. Institutional leaders should develop and publicise a vision for what TEL can do for their organisation, recognising the barriers and enablers to the successful adoption of TEL by academics. Institutions need to recognise the role of academics as leaders of cultural change, subject experts and content creators.

Keywords: adoption of TEL; barriers and enablers; cultural change in organisations.

Context of project

By combining the perspectives of an academic leader and the head of a service, and seeking contributions from a wide range of staff at two very different institutions, new insights should emerge. The aims of the project are:

a) To break down the barriers between academics and Technology Enhanced Learning (TEL) by investigating the influence on the adoption and implementation of TEL.

b) To develop recommendations and implementation strategies for higher education institutions in facilitating effective and sustainable TEL adoption.

Research argues that many universities struggle to engage a significant percentage of students and staff with TEL and real development beyond projects by innovators has so far been modest (Beetham et al., 2009). This is despite the fact that embedding TEL figures highly in the aspirations of many policy makers and senior managers. In over a decade, Oliver and Dempster in 2003, Barton et al. in 2007 and Gourlay et al. in 2014 have concluded that there is no ready model that universities can utilise to embed the adoption of e-learning.

This research advocates that the success of implementing TEL initiatives lies with academics, who are the curriculum developers, designing and delivering the teaching using various methods. However, academic staff can be reluctant to change their methods of teaching and learning without a deep understanding of what the impact will be in terms of quality and any resultant benefits (Salmon, 2005; Gourlay et al., 2014).

Much of the focus has been into the development of technologies or top-down policy aspirations, and not on the human dimensions of what inhibits or motivates academics to adopt TEL. The common argument is that there is not sufficient evidence for such innovation. However, this is indefensible (Picciano and Dziuban, 2007; Garrison and Vaughan, 2008). For example, blended learning (TEL combined with some traditional models of learning) has been shown to have an advantage over face-to-face learning experiences (Means et al., 2010). Despite strong pedagogical benefits, there has been no organisational change that significantly enhances the effectiveness and efficiency of the teaching and learning transaction. This research proposes that in order to deliver institution-wide change, consideration of the needs, concerns and motivating factors of academics in adopting TEL in curriculum and pedagogy must be addressed.

Rationale

Academic staff have a key role to play in the innovation efforts of universities, aiming to transform education through the potential of technology-enhanced learning pedagogies. It will be difficult to implement e-learning without the full cooperation and support of lecturers, as the degree of interaction between lecturers and students is still predominant in e-learning environments (Warburton and Perez-Garcia, 2009; Kelton, 2007; 2008; Kirriemuir 2010). Furthermore, it must be recognised that adopting technology is a '…complex, barrier-ridden and time–consuming process' (Jacobsen, 2000, p.26).

Literature on the barriers and enablers to the adoption of TEL include Larson's (2005, p.104) case study findings that '…rewards such as a feeling of accomplishment and personal satisfaction are key enablers'. Parker's (2003) meta-analysis found the motivators which institutional leaders thought would be effective (such as extra pay, recognition and awards, and royalties on copyright material) did not motivate academics to adopt TEL. The role of academics' confidence in using TEL is a major determinant of people's choice of activities, how much effort they will expend, and of how long they will sustain effort in dealing with stressful situations (Bandura, 1977, p.194). Chen's (2009) study explored an academic's lack of time, lack of interest and the lack of rewards given as deterrence to the adoption of TEL. UCISA's study (Browne et al., 2010) showed that the lack of academic staff knowledge was the top barrier for academics. Lane and Lyle in 2010 looked at how factors such as academics' age, gender and experience affected perceptions of the strengths of the barriers. They found that the main influences were teacher experience and expertise with the technology. Sharpe and Beetham's (2010) study explored the real necessity for academics to develop understanding of how the tools operated, their stability, knowledge of how to use them, and the reliability of one tool over another.

Most research in this area investigates barriers, whilst enabling factors are seldom mentioned or examined. There also does not appear to be much research which privileges the academic's voice and lived experience. In spite of the work which has been done to date, further study is needed to test several aspects around the question of the adoption of TEL in order to explore how the motivators can be used as part of driving TEL forward in an institution, whilst handling the restraining factors that could be in the way. Our research

advocates that the success of implementing TEL initiatives lies with academics, who are the curriculum developers, designing and delivering the teaching using various methods.

Methodology

Our project featured two institutions in the North of England: Newcastle University, a research intensive institution, and University of Cumbria, a newer, teaching-led institution. As well as being our home institutions, these universities were chosen because of their diverse nature in their institutional objectives and missions. We expect that this will provide rich perspectives on the similarities and differences in the factors that motivate or hinder the adoption of TEL. The TEL strategies for both universities are at different stages. Newcastle University has institutional wide TEL activities (such as wide-ranging lecture capture and ePortfolio projects) which are adopted by the majority of academic units. University of Cumbria has a variety of TEL initiatives (ePortfolios and video enhanced teaching) developed through the institution's initiatives and individual pockets of excellence, however, these need to be shared across departments, faculties and campuses for institutional adoption and impact

Stiles (2004, p.14) has argued persuasively that 'clearly understanding where you are starting from is as important as understanding where you want to get to. Expanding the use of eLearning in an institution requires a clear and honest analysis of the organisation in terms of strengths and weaknesses viewed against its strategic goals'. Friesen et al. (2014) argue for the importance of developing empirical findings in order to take forward any technology based learning initiatives.

Therefore, this project begins by examining the needs, concerns and motivations of academics in relation to the adoption of TEL in their curriculum design and investigates the factors which inhibit or encourage the adoption of TEL and the implications of those factors. This approach allowed the researchers to delve into and expose the more personal, cultural and organisational reasons why individuals elect to take up or avoid online teaching.

The authors ran four focus groups across two institutions, involving a total of 34 staff. The focus groups offered a free space for academic and professional service staff to discuss the following statements, taking fifteen minutes for each.

- I would like to support students' learning more by using online tools, but…
- I see benefits in supporting students online, because…
- There are concrete actions that institutions can take to help staff become more effective in their teaching by using online tools.

The first and second questions are deliberately contradictory – the authors wanted the audience to adopt a negative and a positive outlook, respectively, influenced by de Bono's yellow and black hats (De Bono's Six Thinking Hats, 2004).

Running the workshops with a self-selecting audience of those who replied to the invitations opens up risks of possible bias. The authors consulted a professional statistician, who reassured them that the validity of the conclusions would not be compromised as long as the questions about positive and negative opinions were asked openly. No attempts were made to produce a representative sample, but following the principles of purposive sampling (Bryman, 2004), a cross section was sought especially across a range of subject disciplines in both institutions. The analysis was deepened by six interviews with institutional representatives, both staff and students. These discussions included senior academic leaders in both institutions. Ten staff unable to attend responded by e-mail, and these responses were added to the analysis.

The project approach allowed us to expose the more personal, cultural and organisational reasons why individuals choose to take up or avoid online teaching, which has the potential to lead the way to more effective interventions and a more informed decision in developing strategies and practices of implementing eLearning in multidisciplinary subjects. Anonymity and confidentially were guaranteed and participants were offered the chance to withdraw at any time.

Evidence from these discussions was analysed and informed by a literature review and theoretical frameworks. The authors categorised and prioritised the comments made and synthesised the main lessons from that work. That in turn fed into our conclusions and recommendations. Findings from four focus groups undertaken across two institutions

examined the factors that influence academics' decisions to adopt and integrate educational technology, viewpoints for structural peculiarities of universities, motivational and habitual traits of academic staff, and long-standing cultural values in the academic community, in an attempt to understand their impact on technology-enhanced innovation in higher education. The findings were systematically analysed and informed by literature. The discussion in this paper will focus on the pedagogical motivations and concerns of academics and explore the underlying structural and cultural barriers to technology-enhanced innovation in higher education.

Findings

Our findings are presented in three sections in the following table (see Table 1), identifying the factors that are similar in both institutions and those that appear in one institution but not the other. These similarities and differences will be discussed within the context and nature of e-learning within our universities.

Table 1. Findings.

Enablers	Newcastle	Cumbria	Both
	• Motivated by the better retention of students • Enhanced learning • International/cross faculty/ cross discipline opportunities • Employability • Staff development of skills • TEL as a priority for the university, enhancing the university's reputations • Staff recognition • Scalability, reliability and innovation in the software	• Staff gain better communication skills	• Student experience • Identity and belonging • Personalised learning • Flexibility • Creativity • Access to education through widening participation and diversity

Barriers	Newcastle	Cumbria	Both
	- Staff support with the tools - Social diversity, widening participation - Legal issues (copyright, IP)	- Developing multiple online personalities - Design of online study spaces - Staff disenfranchised - Assumption that students are confident with the tools - Student support with the tools	- Sufficiency of digital literacy/fluency skills - Lack of concrete pedagogic evidence in existing literature - The extent of career recognition and progression - Impact on time, resource and staff workload - Lack of opportunity to communicate and share best practice - Not knowing how it impacts student experience of learning - Fear and reticence on the part of staff - Lack of sign posting of support and tools - Believing that just because it is E, it's not better

Institutional measures	Newcastle	Cumbria	Both
	- Develop a long-term TEL plan (sustainability AND transforming learning) - Staff digital literacy plan - Share best practice - Develop hybrid managers - Be risk-aware rather than risk-averse in new developments - Reward, recognition, incentive in TEL - Put students at the heart of education - Empower staff	- Managing hardware and software well – don't change too much at once - Use suitable, meaningful names for TEL projects	- Embed TEL into Learning+Teaching+Assessment strategy, with QAA process - Reflect TEL involvement in staff workload - Localise use of TEL in Schools/ Departments/Subjects (practice) - Recognise research on teaching as a scholarly activity - Make pedagogy fit the subject discipline - Invest in software, people and training

Discussion

Our findings show that the most common barriers in both institutions are the lack of time for learning the use of new technology and to undertake training, lack of experience with technology, and doubts towards the effectiveness of TEL within the curriculum. The lack of accessibility and lack of technical support are also barriers that contribute to the lack of engagement with technology in both institutions.

The authors argue that attitude towards e-learning is important. To achieve sustainable benefits through TEL, institutions need to provide the appropriate support and incentives to academics within their digital literacy plans, with a focused vision and strategies.

Preliminary recommendations

This opinion paper will be developed into a full publication after further analysis. The evidence supports previous work (Oliver and Dempster, 2003) which argues that there is no single best practice in this area. Instead, each institution must set these decisions in its own context.

Our recommendations are likely to be:

1. TEL adoption must be tailored to real learning needs and the motivations of academic staff.
2. Staff face complex pedagogical, technological, economic and cultural challenges in the adoption of TEL.
3. Increasing consumerisation of technology is having an impact. Staff and students expect to be able to use the tools of their choice, quickly and easily.
4. Universities need both to set sensible institutional policies and to allow for innovation to 'bubble up' across the organisation.
5. Universities should recognise and value both the roles of academics as subject matter experts and content creators, and dedicated resources for technical support of TEL.
6. Academic champions should be identified, supported and resourced for each TEL initiative.

7. Universities should support programmes to develop the digital literacy of staff and students, as this benefits effective learning.

Contribution of research

Our recommendations will equip academic leaders to realise the benefits of effective adoption of TEL across subject disciplines. Our findings will benefit university leaders (who may lack information on whether existing staff development approaches are sufficient) to understand and explore how the barriers and motivators can be used to develop TEL in an institution. Furthermore, most research in this area investigates barriers whilst enabling factors are seldom mentioned or examined. There also does not appear to be much research which privileges the academic's voice and lived experience.

Contributions from all readers are welcome on our Blog at:
https://blogs.ncl.ac.uk/removingtelbarriers/

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Author details

Ann Thanaraj is a Principal Lecturer in Law and Barrister at the University of Cumbria. She is the university's faculty representative at the Cumbria Learning and Teaching Committee and the Technology Enhanced Learning special interest group, and delivers guest workshops on Internationalisation of Curriculum and changing pedagogy through the adoption of e-learning. Ann has developed a clinical legal education scheme implemented through the use of virtual game-based learning. Her work on embedding globalisation through TEL in the curriculum was recognised as best practice by the HEA in 2013. Ann has a very keen interest in history and particularly in the design of original buildings and enjoys relaxing in coffee shops, walking along the coast in Tynemouth with a box of chocolates.

Steve Williams is Director of IT at Newcastle University. Before joining Newcastle University in 2008, Steve led IT teams in Germany, the USA and Asia, in a number of international businesses and in local government. Steve leads the IT Service which supports and enables teaching and learning, research and the business of the university. His interests are in transforming organisations with IT, developing high-performing teams, creativity, risk, delivering benefits from projects, and providing services to complex international stakeholders. He has spoken internationally on programme management in higher education, on encouraging take-up of e-learning, and on how IT underpins the internationalisation of HE. Outside work, Steve competes in triathlons and plays the drums.